

APPENDIX A

1. (Currently Amended) A storage management system for backing up digital content of a storage system comprising a plurality of units of storage, wherein the storage management system comprises:

at least one data store;

wherein the storage management system automatically intercepts all write commands issued to the plurality of units of storage, each write command comprising an instruction to overwrite at least one unit of storage with new data; and

wherein the storage management system copies, prior to execution of each write command, old data present at the at least one unit of storage into the at least one data store, wherein a record of the old data is timestamped.

2. (Previously Presented) The storage management system of claim 1, wherein the storage system further comprises one or more physical storage devices on which the digital content of the storage system is stored.

3. (Previously Presented) The storage management system of claim 2, wherein an address for accessing the storage system comprises a device identifier and a location identifier.

4. (Previously Presented) The storage management system of claim 3, wherein the device identifier identifies a physical storage device.

5. (Previously Presented) The storage management system of claim 3, wherein the device identifier identifies a logical device.

6. (Previously Presented) The storage management system of claim 1, wherein the digital content of the storage system can be accessed by specifying an address and a time, and wherein the time specifies that the digital data retrieved from the address is the most recent digital data that was written to the address at or before the time.

7. (Previously Presented) The storage management system of claim 6, wherein the time is explicitly specified in a request to access a unit of storage.

8. (Previously Presented) The storage management system of claim 6, wherein the time is specified in a command to the storage system separate from a request to read a unit of storage.

9. (Previously Presented) The storage management system of claim 6, wherein the storage management system creates a virtual device, wherein the time is specified when the virtual device is created, and is applied when the virtual device is accessed.

10. (Previously Presented) The storage management system of claim 9, wherein new data is written to the virtual device without overwriting data that was written to the storage system after the time specified when the virtual device was created.

11. (Previously Presented) The storage management system of claim 6, wherein a command to the storage system specifies that the time is implicitly a current time.

12. (Previously Presented) The storage management system of claim 6, wherein the time is specified relative to a current time.

13. (Previously Presented) The storage management system of claim 1, wherein the units of storage are blocks.

14. (Currently Amended) A method for backing up digital content of a storage system having a plurality of units of storage, the

method comprising:

intercepting, automatically, all write commands issued to the storage system, wherein each write command comprises an instruction to overwrite at least one unit of storage with new data; and

copying, prior to execution of each write command, old data present at the at least one unit of storage into a data store, wherein a record of the old data is timestamped;

whereby digital content of the storage system can be accessed by specifying an address and a time to access the most recent data stored on the storage device at the address at or before the time.

15. (Original) The method of claim 14, wherein the address comprises a device identifier and a location identifier.

16. (Original) The method of claim 14, wherein specifying the time comprises implicitly specifying the time.

17. (Previously Presented) The method of claim 16, wherein implicitly specifying the time comprises sending a command to the storage system to use a current time as the time.

18. (Original) The method of claim 14, further comprising presenting a virtual storage device for which the time is implicitly set to the specified time for all addresses of the virtual storage device.

19. (Original) The method of claim 18, further comprising writing data to the virtual storage device.

20. (Previously Presented) The method of claim 14, wherein specifying the time comprises specifying the time relative to a current time.

21. (Currently Amended) An apparatus for storing data, the apparatus comprising:

a storage appliance that interfaces with a computer;
one or more physical storage devices that interface with the storage appliance, the one or more physical storage devices having a plurality of storage units, each such physical storage device controlled by the storage appliance;

wherein the storage appliance comprises at least one current store and at least one time store, the at least one current store maintaining a current mirror copy of digital content in the one or more physical storage devices, and

wherein, each time immediately before a storage unit is overwritten with new data and without pre-scheduling, any old data present at that storage unit is timestamped and stored in the at least one time store;

wherein the storage appliance presents one or more virtual storage devices to the computer based on the at least one current store and the at least one time store, and wherein digital data on each of the virtual storage devices is accessed by specifying an address and a time.

22. (Previously Presented) The apparatus of claim 21, wherein the time specifies that the digital data retrieved from the address is the most recent data that was written to the address at or before the time.

23. (Currently Amended) A computer readable medium having code for causing a processor to control a storage system, the storage system comprising a plurality of units of storage, the computer readable medium comprising:

code adapted to automatically intercept write commands issued to the storage system, wherein each write command comprises an instruction to overwrite at least one unit of storage with new data; and

code adapted to copy, prior to execution of each write command and without pre-scheduling, old data present at the at least one unit of storage into a data store, wherein a record of the old data is timestamped;

wherein digital content of the storage system is accessible with a storage device command, the storage device command comprising a storage device address identifying the location of one or more units of storage and a time specification specifying data most recently stored at the storage device address at or before a specified time.

24. (Previously Presented) The computer readable medium of claim 23, wherein the storage device command is a write command and the specified time is a current time.

25. (Previously Presented) The computer readable medium of claim 23, wherein the storage device command is a read command and the specified time is a past time.

26. (Previously Presented) The storage management system of claim 1, wherein the at least one data store comprises a first data store and a second data store, and wherein the first data store maintains a current mirror copy of digital data stored in

the plurality of units of storage, and wherein the second data store contains the old data and the timestamped record of the old data.

27. (Previously Presented) The storage management system of claim 26, wherein, after the old data is copied to the second data store, the at least one unit of storage is overwritten with the new data, and the current mirror copy in the first data store is updated with the new data.

28. (Previously Presented) The method of claim 14, further comprising:

maintaining, in a second data store, a current mirror copy of the digital content of the storage system; and

overwriting the at least one unit of storage with the new data and updating the current mirror copy in the second data store with the new data, wherein the overwriting and the updating occur after the old data is copied to the data store.

29. (Previously Presented) The computer readable medium of claim 23, further comprising:

code adapted to maintain, in a second data store, a current mirror copy of the digital content of the storage system; and

code adapted to overwrite the at least one unit of storage with the new data and update the current mirror copy in the second data store with the new data after the old data is copied to the data store.